

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
26 June 2003 (26.06.2003)

PCT

(10) International Publication Number
WO 03/051587 A1

(51) International Patent Classification⁷: **B26D 1/28**,
B23B 3/03, A47G 19/26

(21) International Application Number: PCT/DK02/00881

(22) International Filing Date:
19 December 2002 (19.12.2002)

(25) Filing Language: Danish

(26) Publication Language: English

(30) Priority Data:
BA 2001 00345 19 December 2001 (19.12.2001) DK

(71) Applicant and

(72) Inventor: **WEINREICH, Jørgen** [DK/DK];
Kragelundsvej 21, DK-8450 Hammel (DK).

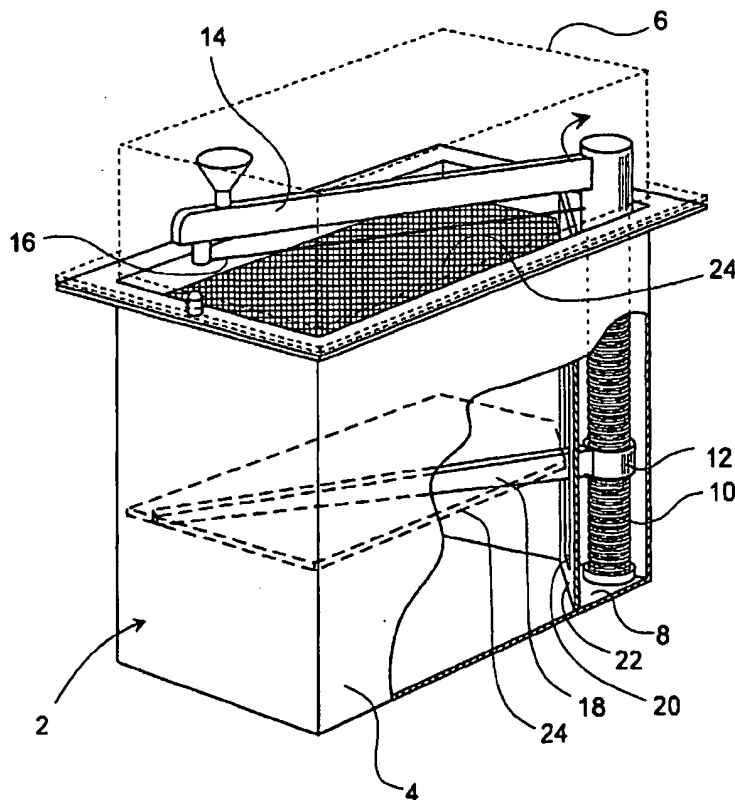
(74) Agent: **PATRADE A/S**; Fredens Torv 3A, DK-8000
Århus C (DK).

(81) Designated States (*national*): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO utility model (GH), ARIPO patent (GH), ARIPO utility model (GM), ARIPO patent (GM), ARIPO utility model (KE), ARIPO patent (KE), ARIPO utility model (LS), ARIPO patent (LS), ARIPO utility model (MW), ARIPO patent (MW), ARIPO utility model (MZ), ARIPO patent (MZ), ARIPO utility model (SD), ARIPO patent (SD), ARIPO utility model (SL), ARIPO patent (SL), ARIPO utility model (SZ), ARIPO patent (SZ), ARIPO utility model (TZ), ARIPO patent (TZ), ARIPO utility model (UG), ARIPO

[Continued on next page]

(54) Title: BOX WITH A SLICER FOR CHEESE AND FOOD



(57) Abstract: A device (2) for slicing of a block-shaped food item is disclosed, especially a piece of cheese, and comprising a pivotably arranged cutting arm (14) having a cutting wire (16) and a thread spindle (10) being adapted for regulating the mutual distance between the food block and the cutting wire (16) in such a way that by each rotation of the cutting arm (14) a food slice is cut off the block, said cutting arm (14) being connected with a with an upper end part of said thread spindle (10), that a support plate (24) for the food block is connected with a nut bushing (12) interacting with the thread spindle (10) in such a way that the support plate (24) is moved in relation to the cutting arm (14) when this is rotated, where the cutting device (2) is encapsulated in a box-shaped housing (4) comprising a lid (6) enclosing the cutting arm (14) and the cutting wire (16), the thread spindle (10) being located inside the housing (4), and the cutting arm (14) being adapted to be placed along an upper longitudinal edge of the housing (4) when said cutting arm is in its inactive position.

WO 03/051587 A1



patent (UG), ARIPO utility model (ZM), ARIPO patent (ZM), ARIPO utility model (ZW), ARIPO patent (ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

IAP20 Rec'd PCT/PTO 15 DEC 2005

Box with a slicer for cheese and food

5

The present invention relates to a device for slicing a block-shaped foods, especially cheese, and of the type specified in the preamble of claim 1.

10 From the hotel and restaurant business a semiautomatic device for slicing of cheese is known, where one or more pieces of cheese are placed on a bottom plate on which a vertical thread spindle is furthermore fastened, the spindle interacting with a pivotable cutting arm having a cutting wire which by the rotation of the cutting arm causes the cutting of a cheese slice from the respective pieces of cheese by each rotation of the cutting arm, in that, by the rotational movement, it is automatically displaced
15 downwards on the thread spindle. Such a cutting device is for example known from DK-B-165 907 which describes a cheese cutter consisting of a bottom plate on which a thread spindle is mounted with mounted lifting plate and a cutting wire. The lifting plate comprises a nut interacting with the spindle in such a way that the lifting plate is
20 moved upwards in relation to the cutting wire when this is rotated.

DK-B-149 685 describes a cheese storage container having a cutting mechanism arranged in a lid. The storage container is furthermore provided with a lifting mechanism adapted for elevating a support plate for a piece of cheese. The lifting
25 mechanism is activated by means of a push button for elevation of the support plate. When the lid is correctly placed on the cheese storage container, the cutting mechanism is placed at the outside of the container.

On this background, it is the object of the invention to provide a device of this type
30 which by simple means has been adapted to household use and which additionally has some very important functional advantages.

The device according to the invention is characterised in that the cutting device is encapsulated in a box-shaped housing comprising a lid enclosing the cutting arm and the cutting wire, that the thread spindle is located inside the housing, and that the cutting arm is adapted to be placed along an upper longitudinal edge of the housing
5 when said cutting arm is in its inactive position.

Hereby a device for slicing of preferably cheese is achieved by simple measures, the device having the great advantage of being constructed as a box-shaped closed unit in that the cutting mechanism can be placed under the lid element. Thus, the device is
10 adapted to household use in such a way that when containing a piece of cheese and being provided with the lid element it can be stored in a refrigerator from which it can be taken out and be ready for use immediately when the lid element is removed.

Compared to normal cheese storage practice, it is a very significant improvement that
15 the device in ready-for-use condition only has to be provided with a relatively tight-fitting lid in order to be stored in a refrigerator. In the situation of use one thus avoids the usually relatively troublesome unpacking and packing of cheese which often can be such a big source of irritation that in practice one simply avoids cheese completely. Device including cutting mechanism and lid element can of course be cleaned in a
20 dishwasher.

In order to facilitate the cleaning of the device it may advantageously be designed in such a way that the support plate is detachably supported on a support arm connected with the nut bushing. Preferably the support arm extends diagonally in the housing, in
25 that it has a descending height, as seen in a vertical plane, in a direction away from the nut bushing.

In order to make it extra easy detach the support plate it may advantageously be designed in such a way that its underside is shaped with an open diagonal equilateral
30 recess towards the bottom, said recess being arranged for loose receiving of an upper part of the support arm.

In order to avoid that the thread spindle is unnecessarily dirtied, it is partly shielded from the housing by means of an oblique partition having a vertical slit through which the support arm extends, in that the support plate has a correspondingly oblique corner part opposite the oblique partition.

5

The invention is explained in more detail below with reference to the drawing in which

Fig. 1 shows a perspective view, partly in section, of an embodiment of the cutting device according to the invention,

10

Fig. 2 shows a plane top view of the cutting device shown in Fig. 1,

Fig. 3 shows a perspective, exploded view of a preferred embodiment of a cutting device according to the invention,

15

Fig. 4 shows a perspective view of a cutting arm for a cutting device, cf. Fig. 3,

Fig. 5 shows a perspective view of a support plate for a cutting device, cf. Fig. 3,

20

Fig. 6 shows a perspective view of a lid for a cutting device, cf. Fig. 3,

Fig. 7 shows a perspective view of a storage container for a cutting device, cf. Fig. 3,

25

Fig. 8 shows a perspective view of a bottom plate for a cutting device, cf. Fig. 3, and

Fig. 9 shows a perspective view of a closed cutting device according to the invention.

30

The cutting device shown in Figs. 1 and 2 is constructed in a box-shaped housing 4 which towards the top can be closed by means of a lid 6. In a separate corner part 8 of the housing 4, a preferably stationary thread spindle 10 with a nut bushing 12 is arranged, which by rotation of the thread spindle 10 by means of a pivotable cutting
5 arm 14 with a cutting wire 16, is displaced upwards or downwards on the outer side of the thread spindle 10. Nut bushing 12 is connected with a support arm 18 extending out through vertical slit 20 in a wall part 22 and diagonally through the housing 4, and which supports a support plate 24.

10 The support plate 24 is intended for supporting a block of a food item, e.g. a piece of cheese, so that the piece of cheese, from an initial position at the bottom of the housing 4, is moved upwards by each rotational movement of the cutting arm 14 so that by each rotation of the cutting wire 16 a piece of cheese is sliced, in a way actually known. When the cheese cutting device 2 is not in use, it can be closed by
15 means of the lid 6 for refrigerator storage.

When the support plate 24 has been moved up completely to a final position, i.e. where the entire piece of cheese has been sliced, return guidance downwards of the support plate 24 can be effected either by swinging the cutting arm 14 back until the
20 support plate 24 has been moved back to its initial position, or the engagement between the nut bushing 12 and the thread spindle 10 can be disengaged in an appropriate way. For example this can be effected by building in a horizontally displaceable connecting pin or connecting catch in the support arm 18 and the nut bushing 12 respectively, so that the connecting pin or connecting catch can take in an
25 active position where the connecting pin or connecting catch and consequently the nut bushing 12 are in engagement with the thread of the thread spindle 10, or an inactive position where the connecting pin or connecting catch and the nut bushing 12 are not in engagement with the thread spindle, so that the nut bushing 12 and consequently the support arm 18 in the latter position can freely be displaced upwards or downwards on
30 the outer side of the thread spindle 10.

Such a connecting pin mechanism or connecting catch mechanism can be arranged, e.g. at the side of the support arm 18, so that the mechanism can easily be operated when the support plate 24 is lifted free off the support arm 18 in that this is preferably loosely placed in a diagonal recess at the underside of the support plate 24. As shown
5 in Fig. 2, the cutting arm 14 can be parked along a side of the housing 4 when the cutting device 2 is not in use, i.e. the cutting arm 14 takes in a position where it by clock-wise rotation immediately cuts into a piece of cheese, i.e. begins its cutting function.

10 Figs. 3-9 show a preferred embodiment of a cutting device 26 according to the invention where the cutting device 26 has undergone a development with regard to design and production technique, and where corresponding parts will be designated with the same the same reference numbers as those used in connection with the cutting device 2 shown in Figs. 1 and 2.

15

The cutting device 26 comprises a housing 4 preferably manufactured of stainless steel plate, and which comprises a bottom element 5, e.g. made of plastic, and which is adapted for press fitting in a bottom opening 7 of the housing 4, in that the cross-sectional forms of the housing 4 and bottom element 5 are adapted to each other.

20

Alternatively, also the bottom element can be made of stainless steel and be welded to the bottom opening 7. As shown more clearly in Fig. 8, the bottom element 5 is shaped with a bearing housing 9 arranged for receiving a bearing bush 11 for a lower bearing part 13 of a thread spindle 10 preferably made of stainless steel.

25

As regards design, the housing 4 is shaped with a cross section which at opposite sides of a slightly curved backside and an even front side 17 comprises two relatively narrow cylinder elements 19 and 21 each being open towards a central storage space of the housing 4, and of which the cylinder element 21 is adapted to receive and fix the thread spindle 10. By means of a nut bushing 12 this is connected with a support
30 plate 24 in such a way that a connecting element 23 is placed in an open slit between the storage space and the cylinder element 21. The support plate 24 is intended for supporting a food block, e.g. a piece of cheese.

The cutting device 26 is assembled in the following way, in that special reference is made to Fig. 3 which shows a perspective exploded view:

5 A cutting arm 14 preferably made of aluminium is provided with a cutting wire 16 of which an end part in usual manner is fastened in a wire holder on the inner side of the cutting arm 14 by means of a knot, while an opposite free end of the cutting wire 16 is fastened and stretched at the opposite end of the cutting arm 14 by means of a nut 31 having a retaining slit and bench screw 33 so that the cutting wire 16 extends freely
10 along a slightly concave curved side of the cutting arm 14. Subsequently bench screw 33 is uncovered by means of a pivotable handle button 35 used by rotation of the cutting arm 14 in a clockwise direction for successive elevation of support plate 24 with a block-shaped piece of cheese, so that a slice of cheese is cut off each time the cutting wire 16 passes the cheese piece.

15 The support plate 24 is mounted on the thread spindle 10 upon which the upper end part 25 of this is provided with a bearing bush 27, bearing housing 29. Then the end part 25 is fastened by means of an external thread 31 in an internal thread 32 of the cutting arm 14. The thread spindle 10 is subsequently mounted in the cylinder element
20 21, assuming that the bottom element 5 with bearing housing 9 and bearing bush 11 have been guided into their correct position in the bottom opening 7, by guiding the bearing part 13 down in the bearing bush 11, and by pressing the upper bearing housing 29 to a fixed position inside the upper end of the cylinder element 21.

25 In other words it is extremely easy and quick to assemble and disassemble the thread spindle 10 with support plate 24 and cutting arm 14 just by guiding it down and pressing it into the cylinder element 21, and, respectively, to pull the thread spindle 10 free off the cylinder element 21 again.

30 As is also shown in Fig. 6, a lid 6 having a shape complementary with the housing 4 is finally provided with an enclosing sealing 37 so that the housing 4 having a bottom element 5, cf. Fig. 9, by means of the lid 6 can be closed in a smell-tight way for

storage of ready-for-use cheese cutting device 26 in refrigerator. In the situation of use, the cheese cutting device 26 is just taken out of the refrigerator, the lid 6 is removed, and the cutting arm 14 is operated by clockwise rotation for cutting off a cheese slice upon which the lid 6 can be put on again for renewed storage in refrigerator.

Finally it should be pointed out that the cutting device according to the invention, which of course is intended for being cleaned in a dishwasher, may have any conceivable shape within the scope of the invention, as long as the cutting principle of a relative movement of a food block in relation to a stationary, pivotable cutting arm and a smell-tight closable storage container for a piece of cheese is fulfilled.

CLAIMS

1. Device (2, 26) for slicing a block-shaped food item, especially a piece of cheese, and comprising a pivotably arranged cutting arm (14) having a cutting wire (16) and a thread spindle (10) being adapted for regulating the mutual distance between the food block and the cutting wire (16) in such a way that by each rotation of the cutting arm (14) a slice of food is cut off the block, said cutting arm (14) being connected with a with an upper end part of said thread spindle (10) so that a support plate (24) for the food block is connected with a nut bushing (12) interacting with the thread spindle (10) in such a way that the support plate (24) is moved in relation to the cutting arm (14) when it is rotated, characterised in that the cutting device (2) is encapsulated in a box-shaped housing (4) comprising a lid (6) enclosing the cutting arm (14) and the cutting wire (16), that the thread spindle (10) is located inside the housing (4), and that the cutting arm (14) has been adapted to be placed along an upper longitudinal edge of the housing (4) when said cutting arm is in its inactive position.

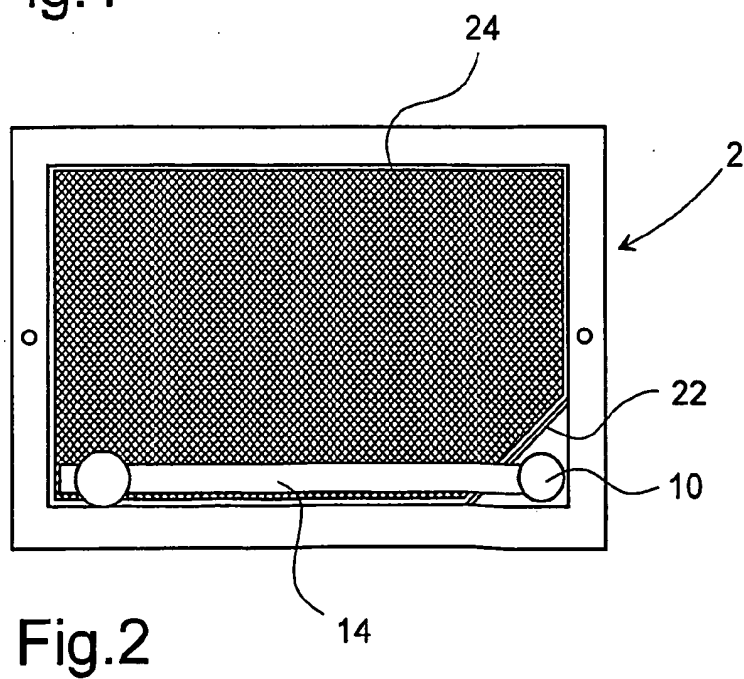
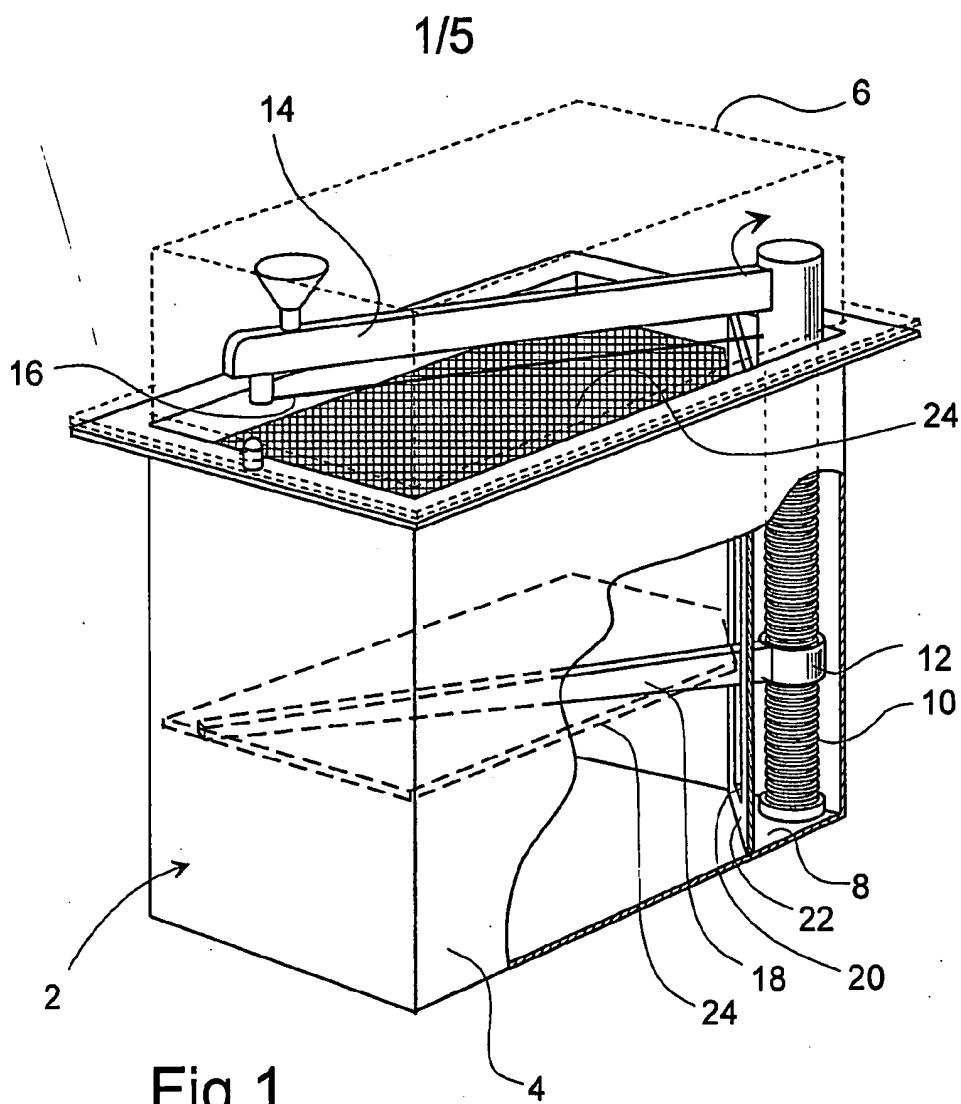
2. Device according to claim 1, characterised in that that the support plate (24) is detachably supported on a support arm (18) connected with a nut bushing (12).

3. Device (2) according to claims 1-2, characterised in that that the support arm (18) extends diagonally in the housing (4), and that the support arm (18) has a descending height, as seen in a vertical plane, in a direction away from the nut bushing (12).

4. Device (2) according to claims 1-3, characterised in that the underside of the support plate (24) is shaped with an open diagonal equilateral recess towards the bottom, said recess being arranged for loose receiving of an upper part of the support arm (18).

5. Device (2) according to claims 1-4, characterised in that the thread spindle (10) is partly shielded from the housing (4) by means of an oblique partition (22)

having a vertical slit (20) through which the support arm (18) extends, in that the support plate (24) has a correspondingly oblique corner part opposite the oblique partition (22).



2/5

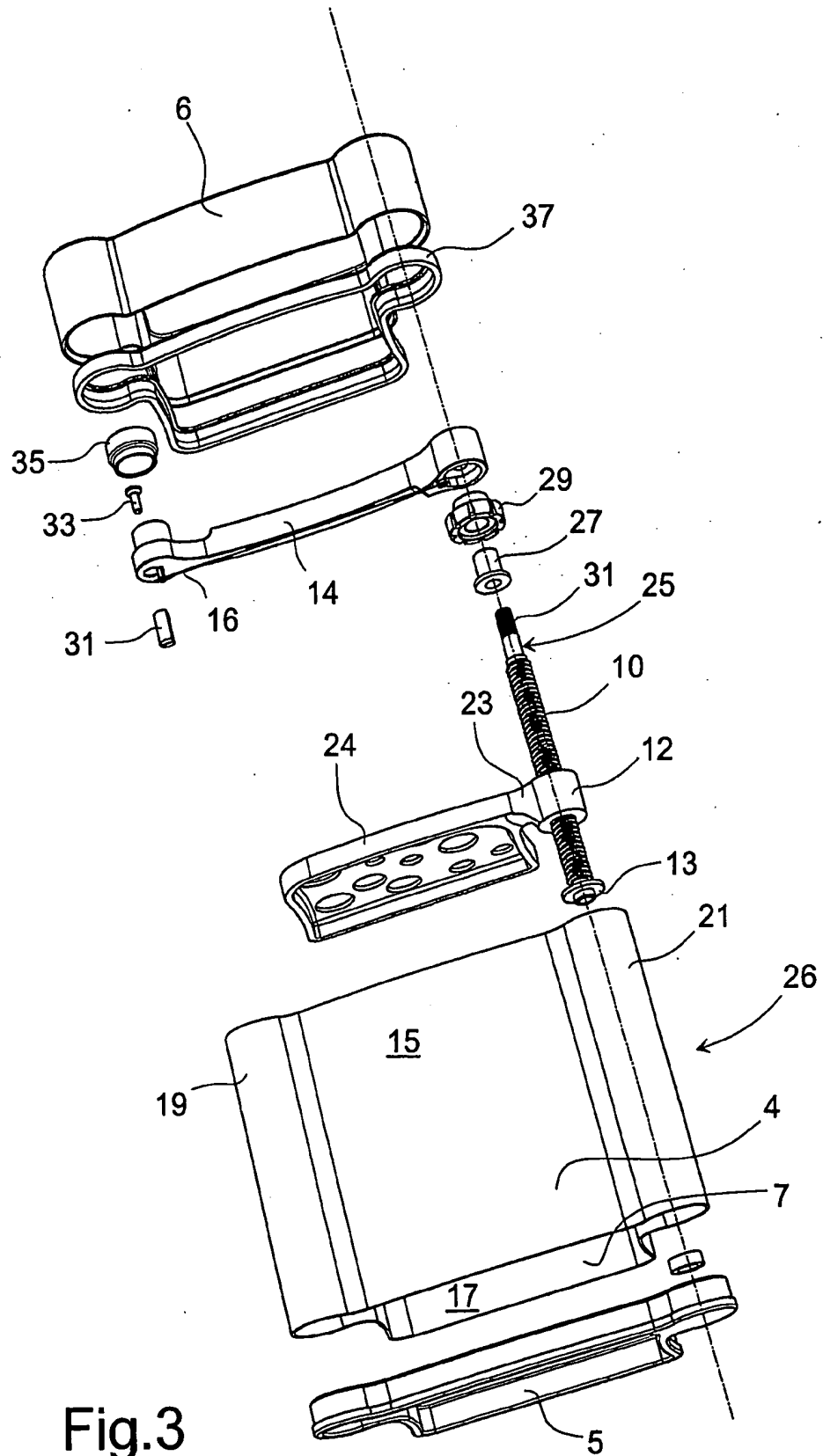


Fig.3

3/4

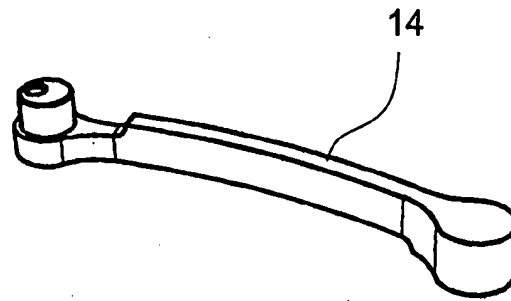


Fig. 4

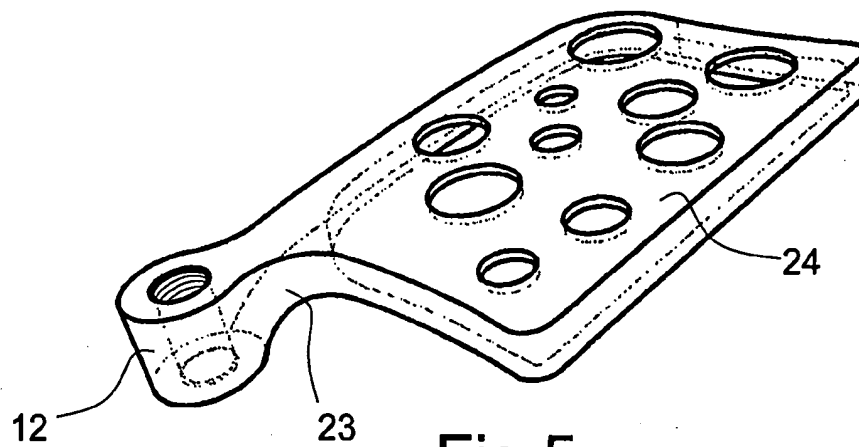
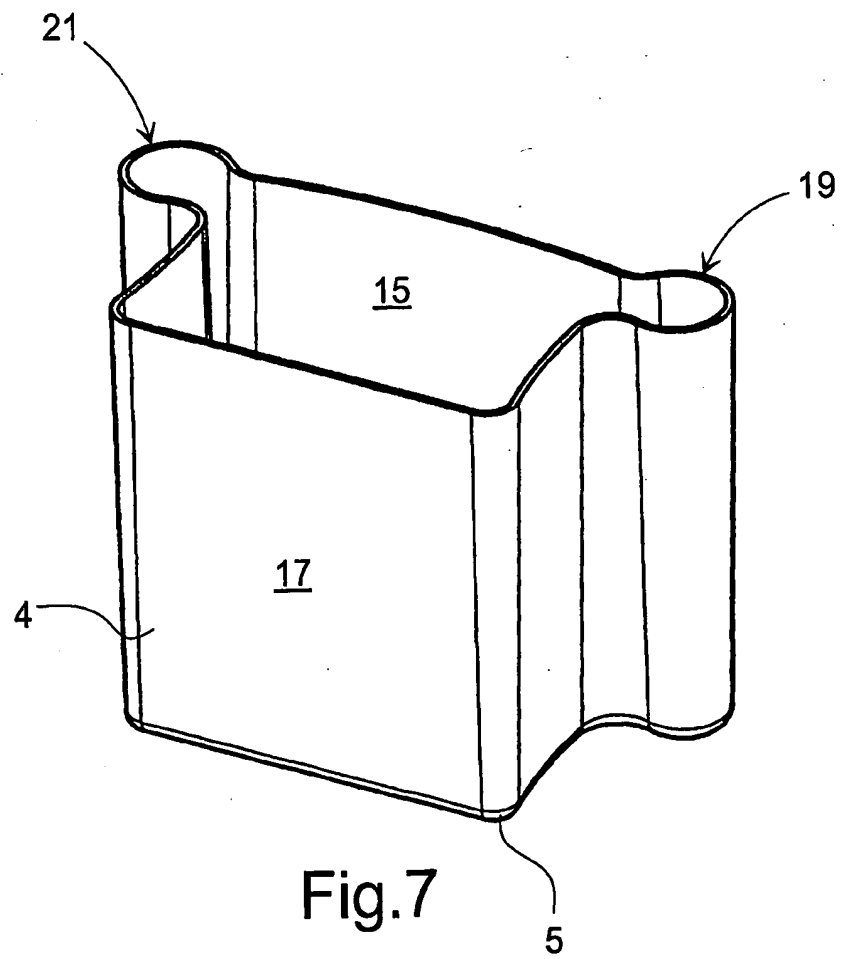
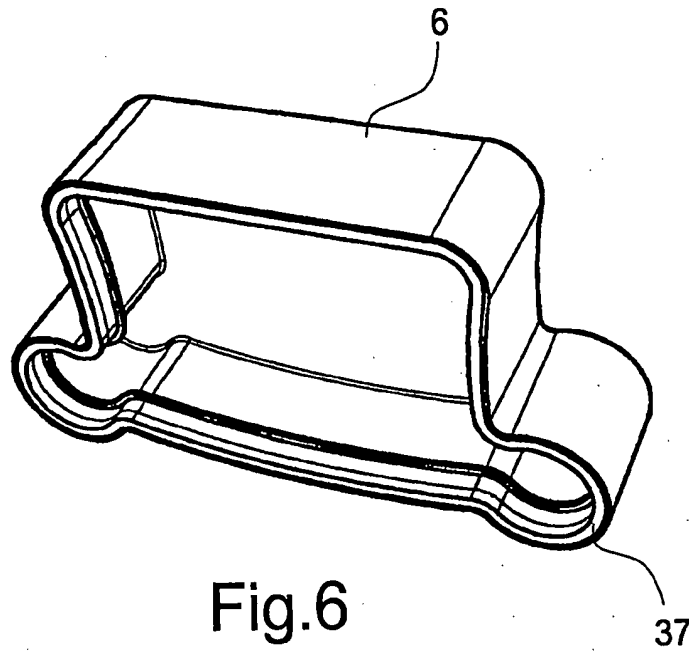


Fig. 5

4/5



5/5

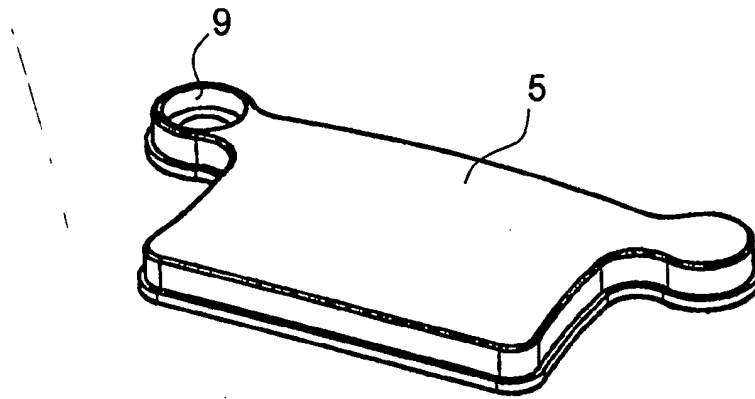


Fig. 8

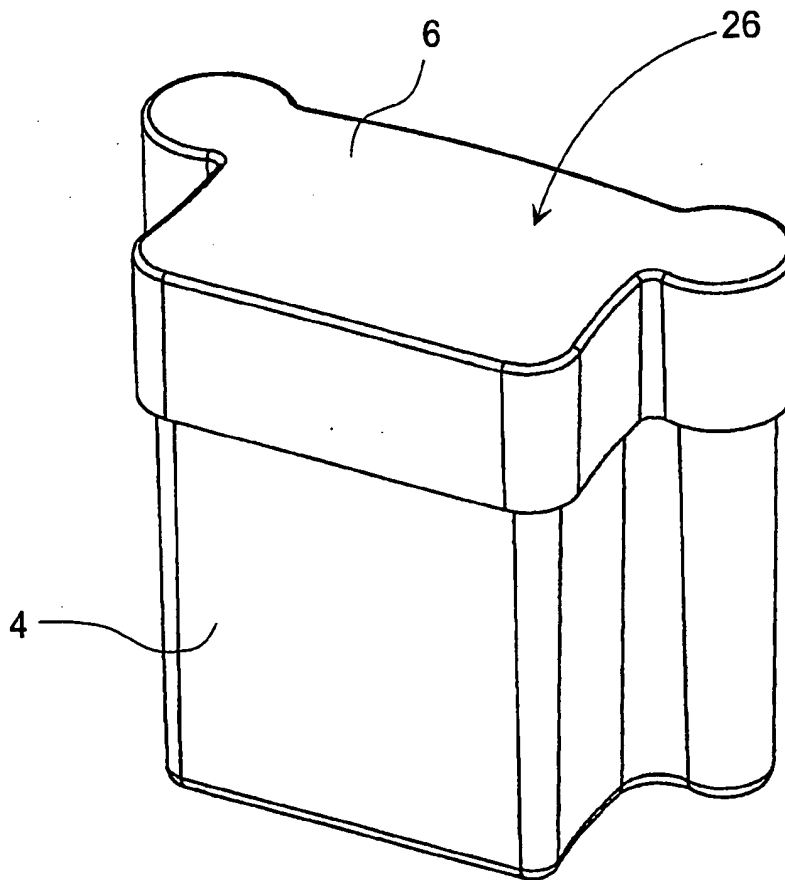


Fig. 9

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 02/00881

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: B26D 1/28, B23B 3/03, A47G 19/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: B26B, B26D, A47G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	SE 44694 A (H.F. J. NIELSEN ET AL), 10 December 1917 (10.12.17), page 1, figures 1-2 --	1-5
Y	SE 105 A (G.A. LINDSTRÖM), 20 February 1883 (20.02.83), page 1, figures 1-2 --	1-5
A	DE 29801210 U1 (KÖNIG-TIESMEYER, MARION), 20 May 1998 (20.05.98), page 12, line 10 - line 18, figure 7 --	1-5
A	FR 0081466 A1 (CREVOISIER, NICOLAS), 15 June 1983 (15.06.83), figure 1, abstract --	1-5

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

11 March 2003

Date of mailing of the international search report

13-03-2003

Name and mailing address of the ISA/
Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. +46 8 666 02 86

Authorized officer

Ola Engstrand/MP
Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 02/00881

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 8605960 A1 (DYBBRO, ARNE-OLE), 23 October 1986 (23.10.86), figure 1, abstract -----	1-5

INTERNATIONAL SEARCH REPORT

Information on patent family members

30/12/02

International application No.

PCT/DK 02/00881

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
SE	44694	A	10/12/17	NONE	
SE	105	A	1883	NONE	
DE	29801210	U1	20/05/98	DE 19903021 A DE 19702586 C	16/03/00 28/05/98
FR	0081466	A1	15/06/83	NONE	
WO	8605960	A1	23/10/86	DK 149685 B,C DK 481583 A	08/09/86 21/04/85